

REMARKS

In the final Office Action, the Examiner agreed with applicants that claims 9-14 and 17 correspond to elected Group I. Accordingly, only claims 18-22 and 29 were withdrawn from consideration.

Claim 17 was objected to based on a minor informality and claims 11-14 and 26 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner stated that the phrase "a plurality of coils wound around the respective magnetic poles" is indefinite because it is unclear if it means that the coils are wound on the stator or directly on rotor poles.

Applicants respectfully disagree with the Examiner's conclusion that the aforementioned claim language renders any of claims 11-14 and 26 indefinite. The quoted language "a plurality of coils wound around the respective magnetic poles" is broad enough to encompass coils that are wound on a stator (and thus indirectly wound around magnetic poles) or coils that are wound directly on rotor poles. The use of broad language does not render the claims indefinite. Although the specification may provide literal support for only one of the foregoing interpretations, claims are not limited to the embodiments disclosed in the specification. Accordingly, applicants respectfully request withdrawal of the rejections under 35 U.S.C. §112, second paragraph.

Claims 8-9, 17 and 23 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,936,370 to Fukao et al. ("Fukao"). The Examiner stated that Fukao discloses a magnetic bearing apparatus comprising a rotor 50, a motor having stator coils Na/Nb for generating a rotary magnetic field for rotating the rotor, magnetic supporting coils for producing a magnetic force for magnetically supporting the rotor in a radial direction thereof, composite magnetic force inferring means comprising a "mutual inductance matrix" M for inferring composite vectors of the magnetic forces affecting the rotor based on the rotary magnetic field, and magnetic support adjustment means comprising the controller 82 which adjusts the magnetic force produced by the magnetic supporting coils to offset the composite vectors of the magnetic force in the motor by estimating a displacement of the rotor 50 and magnitude of the rotating field, generating command values, and applying voltages to the magnetic bearing windings.

With respect to claim 23, the Examiner pointed out that the matrix M is both a composite magnetic force inferring and determining means since the magnetic force vectors are derived in Fukao by the controller 82 using magnetomotive force equations 1-4, matrix equations 10 and 13-15, and mutual inductance equation 12.

Claims 12 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fukao in view of U.S. Patent No. 5,880,549 to Chiba et al. ("Chiba"). Chiba was cited as disclosing a brushless reluctance rotator including a combined motor and magnetic bearings.

Applicants' and applicant's undersigned attorney acknowledge with appreciation the indication of allowable subject matter with respect to claims 10, 11, 13, 14, 24, 25, 27 and 28.

In determining that claims 13 and 27 contain patentable subject matter, the Examiner pointed out that Fukao discloses that the radial position of the rotor is detected by measuring terminal voltages of the magnetic bearing windings C2 and explicitly states that radial position sensors are not used or needed.

To obtain allowance of their application, applicants have amended independent claims 8 and 23 to incorporate the allowable subject matter of dependent claims 13 and 27. Specifically, claims 8 and 23 have been amended to recite the radial position sensor set forth in dependent claims 13 and 27. Claims 13 and 27 have amended to delete the radial position sensor therefrom.

In addition, non-elected claims 18-22 and 29 have been canceled without prejudice or admission, claim 17 has

been amended to correct the informality noted by the Examiner, claims 8 and 23 have been further amended in a minor clarifying respect to recite that the composite vectors of the magnetic force in the motor are --canceled-- rather than "offset".

Applicants respectfully request entry of the foregoing amendments since they merely comprise the incorporation of allowable subject matter of dependent claims into the corresponding base claims. Thus, no further consideration or search is necessitated by the amendments. In addition, the amendments substantially narrow any appealable issues because they present the claims in a substantially narrowed form. Since the subject matter of the dependent claims has already been considered by the Examiner on two previous occasions, entry of the foregoing amendments does not impose a burden on the Examiner and should not be denied.

Based on the foregoing amendments, applicants respectfully submit that claims 8-14, 17, and 23-28 are now in allowable form.

In view of the foregoing amendments and discussion, the application is now believed to be in condition for allowance. Accordingly, entry of the present amendment

together with favorable reconsideration and allowance of the claims are respectfully requested.

Respectfully submitted,

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By: 

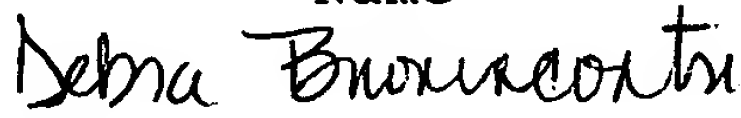
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